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Sport Shoe,
in Particular, a Jumping Shoe

DT 24 26 231 Pg. 1

Description

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⁽⁵⁴⁾ Title Sport shoe, in particular a shoe for jumping	
⁽⁵⁶⁾ The following documents were referred to (those listed)	

⁽⁵⁷⁾ Summary: none

The invention concerns a sport shoe, in particular a shoe for jumping, the outer sole of which is equipped with gripping elements for increasing the holding power and which has a cap which envelops the upper in the heel zone.

The universally existing problem, of creating outer soles of shoes to be slip-safe, has been a serious matter for sport designers up to now, especially where running and jumping shoes for light athletics (track & field) are concerned. A great number of proposals have been presented for the design of the outer soles of such shoes in order to increase their grip and non-slip characteristics on the track. These proposals largely concern the arrangement of spike-like gripping elements on the outer sole.

In the case of sport shoes for the running disciplines, interest has practically been exclusively concentrated to the forward part of the soles, since a runner supports his foot impact by this portion of the sole. However, where sport shoes for competitive jumping are concerned, the heel portion has to be given some consideration. The reason for this is, that in the discipline for jumping, including broad jump, pole vaulting, high jump, and triple jump, immediately prior to the jump an emplacement of the heel area is necessary and on this account, the outer sole must have good gripping power in this heel area. Experience has indicated, that former measures, which have pointed to the increasing of gripping power of outer soles in the heel area, have not been sufficient to provide the athlete with a desirable full security at the moment of the jump. This security is necessary, in order to give the athlete the freedom to concentrate exclusively on the running approach motion for the final jump without having to give consideration to the condition of the ground or a particular leg position to assure safety.

The present invention does give consideration to this problem statement and accepts the purpose to improve sport shoes of the generic type described in the introductory passages, so that the said shoes, exhibit in the heel area an increased slip-safety and are thus especially appropriate for competitive jumping. In accord with the invention, this purpose is achieved, in that the cap, even in its elevated position on the upper, is equipped with gripping means.

In a preferred embodiment, the said cap is constructed of one piece with the outer sole. It is of particular advantage, if the gripping elements are made also in one piece with the cap, arranged at uniform distribution, one from the other, and are sharp edged pyramids. More advantageously, the height of these pyramids is in the general magnitude of 1 to 2 times the thickness of the outer sole and it is further advantageous if this sole is constructed of plastic, especially Nylon®.

By means of the inventive design, by which the heel cap also exhibits gripping elements in its higher area on the upper, consideration has been given to the fact, that each jumper, dependent upon the length of the jumper's stride, at that transitional instant between stopping in full run and the preparation for jumping-off, sets the heels at a different and individual slant to the track. It is already known, where jumping shoes are concerned, to provide gripping elements which, as a rule, are spikes. However, the jumper must make adjustments in technique, for instance, in the degree of inclination of heels, in accord with the disposition of the spikes. This has to be done instead of choosing the most favorable motion for approach. In the case of the invented sport shoe, such an adjustment is not necessary, since the gripping elements in the heel cap provide slip-safety at any approach angle. In acquiring this improvement the mentioned, pyramidal profiled projections which are of one piece with the outer sole are specially of great advantage. These projections, or spikes, are uniformly distributed over the entire cap. Because of the great number of such profile-projections, contrary to the arrangement of spikes, the holding power of the heel cap over the area on which they are installed, is uniform, so that thereby the advantage sought by the invention is seen more clearly.

In the following, a preferred embodiment of an invented sport shoe is more closely explained with the aid of the attached drawing. From the drawing, as also from the subordinate claims, a more detailed description of additional advantages and features of the invention. There is shown in:

Fig. 1 a perspective view of the heel section of a sport shoe in accord with the invention;

Fig. 2 a top view of the heel section shown in Fig. 1; and

Fig. 3 a view from below of the heel section shown in Figs. 1, 2 of an invented sport shoe.

In accord with the presentation in Fig. 1, the sport shoe comprises an upper, 1 and an outer sole 2, which, in a practical manner, is made of a flexible and durable plastic, preferably of Nylon®. In the embodiment presented in Fig. 1 the outer sole 2 extends itself not only into the heel zone but further upward from this into the heel end upper and forms there a heel cap 3, which also encloses the side heel areas of the said upper. The heel cap 3 is connected to the upper 1 by rivets 4. Obviously, instead of a riveted connection, other appropriate kinds of fastening can be chosen. Among such choices, the use of an adhesive between the heel cap 3 and the shaft 1 is recommended. The fastening by means of rivets has the advantage, that in such cases, in which the heel cap 3 – contrary to the presented embodiment – is not of one piece with the outer sole, then, by the removal of the rivets, an exchange can be made, giving a new heel cap.

The heel cap 3 carries a multiplicity of pointed, profiled projections 5, that have the shape of tetrahedrons. The profiled projections 5 are arranged uniformly separated, one from the other, the separation being somewhat of the order of the height of a tetrahedron. Obviously, this distance can be varied in the widest possible manner, whereby, however, consideration must always be given to the fact, that through the arrangement of these profiled projections, the heel cap should possess the greatest possible holding power for its given surface area. Allowing too great a free area between the said profile projections should also be avoided.

As may be inferred from Fig. 3, the tetrahedrons on the sole side are designed also in a regular uniformity. This arrangement, however, is not retained on the upper side. At the latter location, it is advantageous, as Fig. 1 shows, that the profile projections 5, in reference to the surface of the heel cap 3 are so angularly inclined, that their apexes 6 tend somewhat downward. This permits a particularly good gripping upon a steeply slanted setting of the heel. It can be seen from Fig. 1 to Fig. 3, that the tetrahedron shaped, profiled projections 5 are arranged in rows, which are somewhat parallel to the longitudinal direction of the sole, as well as running transverse to the same. In this way, the projections are alternately so positioned, that at one time a sharp edge and the next time a triangular surface points to the toe of the shoe. This provides a particularly uniform apportioning of the gripping power, whereby the advantage is gained, that the forward facing, sharp edges of the tetrahedrons cut into the track, while the triangular surfaces assure the desired protection against slipping.

As already mentioned, the heel cap 3 does not necessarily have to be made in one piece with the outer sole 2. For example, it is also possible, to make the heel cap 3 separately so that, as is shown in Fig. 3 with dashed lines, it extends itself into the sole area at the heel. In both cases, it is, however, of advantage, to provide an opening 7 at the crown point of the heel cap 3, which completely penetrates the wall thickness of the heel cap 3 and serves as a pressure equalizer. Upon a sudden strong loading of the heel cap 3, namely the air cushions between the upper, sole and cap are possibly severely compressed and can bring about a bursting of the heel cap 3. Since, otherwise, achieving a certain cushioning and springlike effect from these air cushions is not totally undesirable, it is advantageous to make the opening 7 in a narrow slit shape, so that the expelled air experiences a certain throttling and does not escape with an explosive deflation of the air cushions.

Since, upon setting down the heel at a steep slant, then inevitably only a small area of the heel cap 3 comes into contact with the track.

In such a case, advantageously to compensate for the associated loss of slip-safety, in the area of the most pronounced heel bulging, it is well to design the profiled projections 5 longer than are the projections on the rest of the heel cap. Even one embodiment, in which the length or height of the profiled projections 5 increase in the upper area of the heel cap, assists in achieving these advantages. The reason for this is, that the points of the elongated profiled projections 5 remain gripping the track, while the fastening surfaces of the said projections are outside of those surface areas of the heel caps 3 which are actually implanted on the track.

It is advantageous to keep the side surfaces of the profiled projections 5 extremely smooth, which is very possible when these are Nylon®, in order to prevent the depositing of dirt and the concomitant encrustation on the profiling.

Although the above presented embodiment example, only the profile projections 5 have been shown as pointed gripping elements, it is obviously possible, in their place to equip the heel cap 3 with the conventional spikes. In doing this, in any case, it is to be recommended that the length of these spikes on the said cap be substantially reduced from the length of the spikes arranged on the outer sole and that they be placed, analogous to the here demonstrated profiled projections 5, substantially closer together. Moreover, a number of measures should be given consideration, which are described as advantageous in connection with the profiled projections 5. For instance, one measure is the said inclining of the gripping elements downward, which also could be employed in the case of spikes.

The invention is not limited by the following claims. To the invention are to be attributed much more all novel and obviously inventive concepts which arise from the description and drawings in relation to the state of the technology.

Claims

Claimed is:

1. A sport shoe in particular a shoe for jumping, the outer sole of which is equipped with pointed gripping elements to increase the holding power, and which shoe possesses a cap, which envelopes the upper in the heel zone, therein characterized, in that the cap (3) is also equipped with gripping elements (5) in its higher area on the upper (1).
2. A sport shoe in accord with Claim 1, therein characterized, in that the cap (3) is constructed as one piece with the outer sole (2).
3. A sport shoe in accord with Claim 1 or 2, therein characterized, in that the gripping elements are made of one piece with the cap (3), and comprise sharp edged pyramids (5), arranged with uniform distribution from one another on all sides.
4. A sport shoe in accord with Claim 3, therein characterized, in that the pyramids (5) are tetrahedrons, which are so arranged, that alternately, a sharp edge and a triangular side surface face the toe of the shoe.
5. A sport shoe in accord with one or more of the Claims 1 to 4, therein characterized, in that the gripping elements (5) in relation to the surface of the cap (3) are so inclined, that their points (6) are directed downward.
6. A sport shoe in accord with one of the Claims 3 to 5, therein characterized, in that the pyramids (5) are irregular in height and so arranged, that their short side edges point to the toe of the shoe.
7. A sport shoe in accord with Claim 6, therein characterized, in that the apexes (6) of the pyramids (5) lie outside of their base connection surfaces with the cap (3).

8. A sport shoe in accord with one or more of the Claims 1 to 7, therein characterized, in that the gripping elements (5) in the upper area of the cap (3) exhibit a longer length.
9. A sport shoe in accord with one of more of the Claims 1 to 8, therein characterized, in that the cap (3) possesses an opening (7) penetrating its wall thickness, which opening serves as a pressure compensator.
10. A sport shoe in accord with Claim 9, therein characterized, in that the opening (7) is slit-shaped and is placed in the apex of the bulge of the cap (3).
11. A sport shoe in accord with one or more of the Claims 1 to 10, therein characterized, in that the cap (3) is riveted to the upper (1).
12. A sport shoe in accord with one or more of the Claims 1 to 11, therein characterized, in that the heel cap (3) extends itself to approach the top rim of the upper (1).
13. A sport shoe in accord with one or more of the claims 1 to 12, therein characterized, in that the heel cap (3) is equipped with gripping elements (5) over its entire surface.
14. A sport shoe in accord with Claim 1, therein characterized, in that the gripping elements are conventional spikes, the length whereof is less than the length of the spikes used for the outer sole.

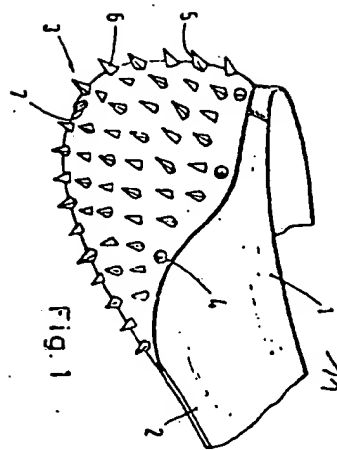


Fig. 1

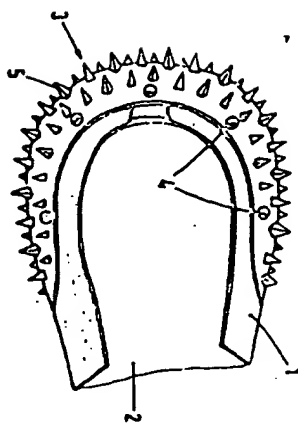


Fig. 2

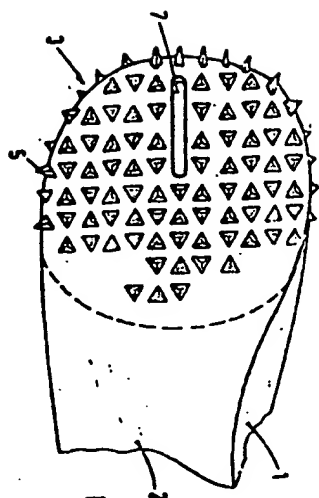


Fig. 3

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